Investigation of the marshy and alkaline Soils by the Agricultural Department.

22. **MR. G. RAMAN MENON** (*Mavelikara* cum *Kartikapalli*) : Will the Government be pleased to place on the table a statement containing the following particulars :—

(*a*) the date from which the Department of Agriculture started investigations and experiments on marshy and alkaline soils in the State ;

(*b*) the names, qualifications and official designations of the officers who have been engaged in the work ;

(*c*) the period of time for which each officer has worked on the subject ; and

(*d*) the results of the labours of each ?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*) :

(*a*) About ten years ago.

(*b*) The following officers were engaged in the work :

(1) Mr. K. Paramesvaran Pillai B. A., B. SC., F. C. S., the present Assistant Director of Agriculture and Fisheries. The study of alkaline and marshy soils was first started by him while he was the Agricultural Chemist. His qualifications then were that he had passed the B. A. Degree Examination in Chemistry and had undergone training, in agricultural chemistry at Pusa for a period of two years.

(2) Mr. K. R. Narayana Aiyar, B. A., of the University of Madras with Chemistry as optional subject. He is now the Assistant Agricultural Chemist in the department. His special qualifications for the post are that he had undergone two years' training in the Indian Institute of Science, Bangalore, in advanced chemistry and one year's training in the Research Institute at Pusa, in agricultural bacteriology.

(*c*) The officers of the Agricultural Research Laboratory have carried on the investigation along with other work and hence it is not possible to specify the exact period during which they have been engaged in this particular investigation.

(*d*) While Mr. K. Paramesvaran Pillai was the Agricultural Chemist, he began a detailed physical and chemical examination of both marshy and alkaline soils. As a knowledge of soil bacteriology was essential for a careful and thorough investigation of all the problems connected with the reclamation of these soils, Mr. K. R. Narayana Aiyar, Assistant Agricultural Chemist, was deputed to Pusa, at Government cost, towards the end of 1098, to undergo the necessary course of training in the subject. He returned from Pusa towards the end of 1099, fully qualified to undertake the work. Since then, he has been engaged in the investigation of the problems connected with the reclamation of marshy and alkaline soils. He conducted a detailed biological examination of the marshy soils in the State last year and found that beneficial soil bacteria, like ammonifiers, nitrifiers and nitrogen fixers, which are the chief agents in transforming the unavailable carbonaceous and nitrogenous substances in the soil into forms

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easily assimilable by plants, are conspicuous by their absence. His attempts to introduce these bacteria into the soil showed that they refused to grow in it. He thereupon conducted experiments to find out the factors present in the soil, inhibitory to the growth of the bacteria and consequently to the growth of plants. The experiments showed that the following deleterious factors were responsible for the failure of crops in these soils:

(1) high acidity;

(2) presence of toxic concentrations of water-soluble alkali salts;

(3) aluminium toxicity;

(4) presence of organic toxic bodies like hydroxy-stearic acid etc.; and

(5) phosphate depletion.

The Assistant Chemist is now engaged in conducting experiments in the laboratory to find out an economic and practical method of rendering these factors innocuous by proper soil management and suitable soil amendments. To test these methods on a large scale, an experimental station has been opened at Porakad, where arrangements are reported to be in progress for starting cultivation next season.

With regard to alkaline soils, the presence of a species of sulphur oxidising organism has been discovered which possesses the power of reducing the alkalinity by the biological oxidation of elemental sulphur. It is reported that experiments carried out in the laboratory show that, by the application of half a ton of sulphur per acre under optimum conditions of moisture and aeration, the initial alkalinity is reduced by 85 per cent. during the course of two and a half months by this sulphonification process. Experiments have been started in South Travancore to test the laboratory results on a large scale under field conditions and it is reported that the experiments are progressing satisfactorily. The investigations of marshy and alkaline soils are being continued.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): As regards the answer to part (*b*) (1), was it without the knowledge of soil bacteriology that Mr. K. Parameswaran Pillai began the investigations?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): In scientific matters, one may have a general knowledge or a special knowledge. He began the investigations with his general knowledge.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): With regard to the training in Pusa, was not the expert taught soil bacteriology?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): He had training in general agricultural chemistry. Soil bacteriology is a part of it. He had not specialised in that.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): Then, is he qualified to undertake any investigation?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): I only said that he had not *specialised* in that.

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MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): Is the Director of Agriculture competent to conduct such investigations with the help of subordinates?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): In a way, he is competent.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): Does he possess the necessary expert knowledge?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): There are degrees of knowledge.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikapalli*): But is it sufficient for practical purposes?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): It will go some way. Mr. Narayana Aiyar's knowledge may not also go all the way.

MR. G. RAMAN MENON (*Mavelikara* cum *Kartikpalli*): All that I wanted to know is whether his knowledge is sufficient for practical purposes?

MR. N. NILAKANTA PILLAI (*Secretary to Government on other duty*): Yes, to some extent.

Disposal of Complaints against Government Officers.

23. **MR. G. RAMAN MENON** (*Mavelikara* cum *Kartikapalli*): (*a*) Are not the Government aware, from representations in the Sri Mulam Popular Assembly and the Legislative Council and other sources, that there is a wide-spread feeling among the people that, under the present circumstances, superior Government officers are too sympathetic towards their subordinate officers in the latter's misdeeds and derelictions of duty towards the public to be able to deal justly with the departmental complaints of the people against misdeeds and corruption on the part of high grade Government officers?

(*b*) Will the Government be pleased, in view of the fact referred to in part (*a*), to make arrangements for associating some representatives of the people also in all enquiries regarding serious complaints by the members of the public against Government officers holding appointments carrying a pay of Rs. 50 or more per mensem?

MR. K. NARAYANAN PANDALAY (*Ag. Chief Secretary to Government*) (*a*) The Government are aware that there is some public uneasiness in the matter.

(*b*) The suggestion does not commend itself to Government.

Average Wealth of Communities.

24. **MR. X. G. LOPEZ** (*Nominated*): (*a*) Have the Government ascertained the average wealth of the different communities, including the sea-coast Christians, in the State?

(*b*) If so, will they be pleased to place on the table a comparative statement showing the same?

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